



HI-SINCERITY MICROELECTRONICS CORP.

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HSB647A

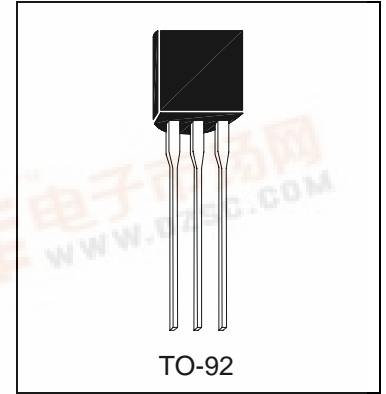
SILICON PNP EPITAXIAL

Description

Low Frequency Power Amplifier Complementary Pair With HSD667A.

Absolute Maximum Ratings

- Maximum Temperatures
 - Storage Temperature -55 ~ +150 °C
 - Junction Temperature 150 °C Maximum
- Maximum Power Dissipation
 - Total Power Dissipation (T_A=25°C) 900 mW
- Maximum Voltages and Currents (T_A=25°C)
 - V_{CBO} Collector to Base Voltage -120 V
 - V_{CEO} Collector to Emitter Voltage -100 V
 - V_{EBO} Emitter to Base Voltage -5 V
 - I_C Collector Current (DC) -1 A
 - I_{CP} Collector Current (Peak) -2 A



Electrical Characteristics (T_A=25°C)

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	Collector to Base Breakdown Voltage	-120	-	-	V	I _C =-100uA, I _E =0
BV _{CEO}	Collector to Emitter Breakdown Voltage	-100	-	-	V	I _C =-1mA, R _{BE} =∞
BV _{EBO}	Emitter to Base Breakdown Voltage	-5	-	-	V	I _E =-10uA, I _C =0
I _{CBO}	Collector Cutoff Current	-	-	-10	uA	V _{CB} =-100V, I _E =0
*V _{CE(sat)}	Collector to Emitter Saturation Voltage	-	-	-1	V	I _C =-500mA, I _B =-50mA
V _{BE(on)}	Base to Emitter Voltage	-	-	-1.5	V	V _{CE} =-5V, I _C =-150mA
*h _{FE1}	DC Current Transfer Ratio 1	60	-	200		V _{CE} =-5V, I _C =-150mA
*h _{FE2}	DC Current Transfer Ratio 2	30	-	-		V _{CE} =-5V, I _C =-500mA
f _T	Gain Bandwidth Product	-	140	-	MHz	V _{CE} =-5V, I _C =-150mA
Cob	Collector Output Capacitance	-	20	-	pF	V _{CB} =-10V, f=1MHz, I _E =0

*Pulse Test: Pulse Width ≤380us, Duty Cycle≤2%

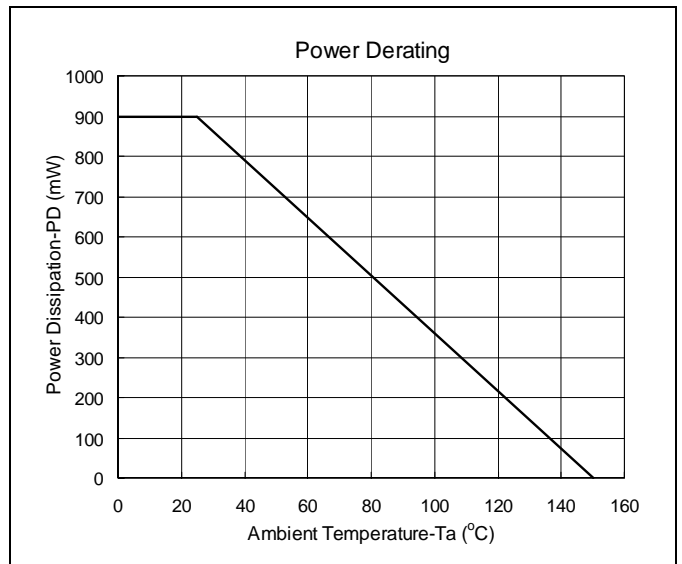
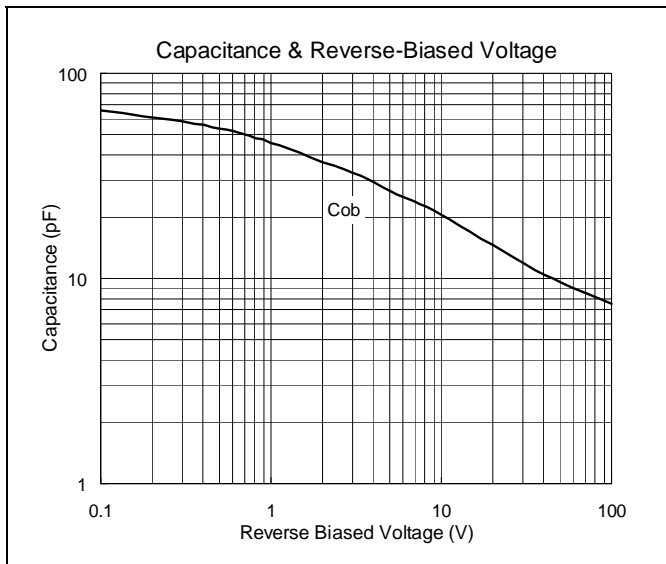
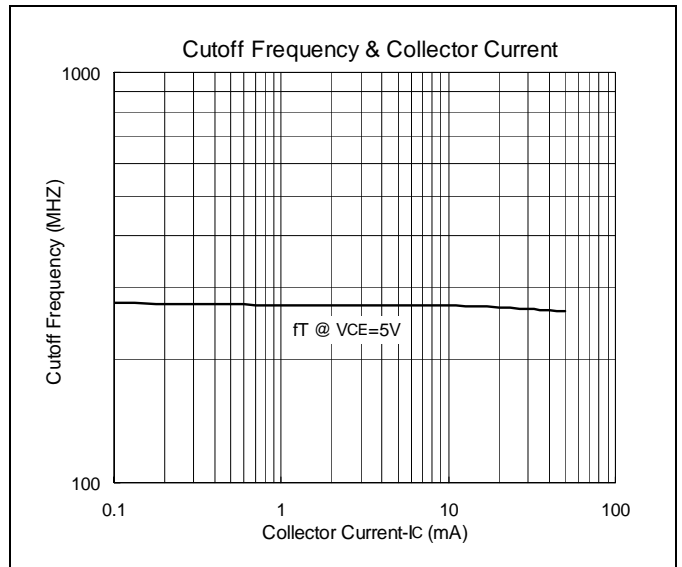
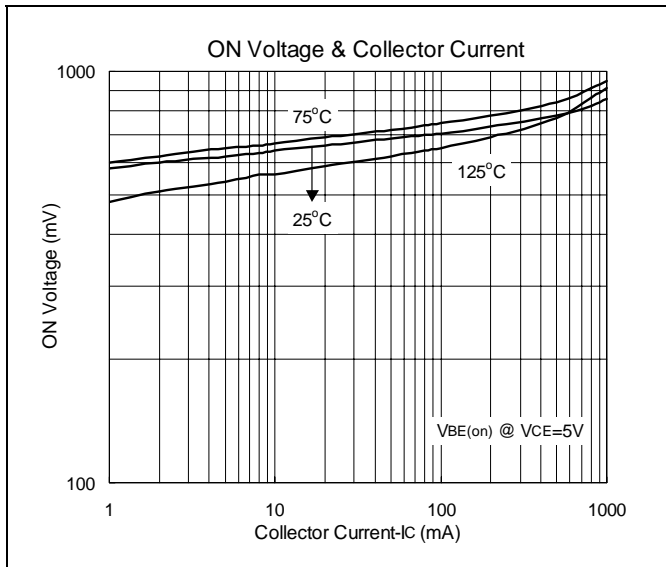
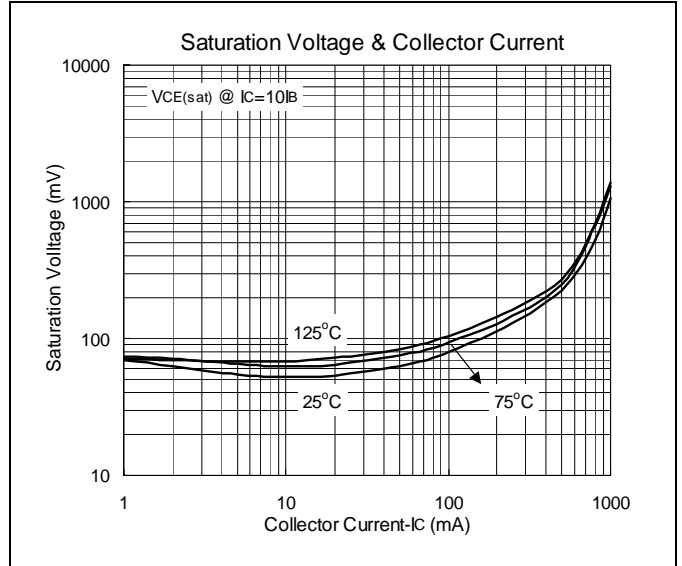
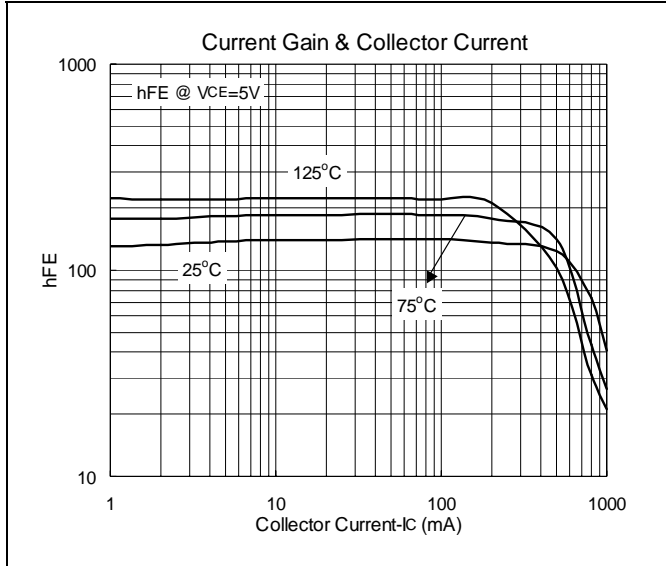
Classification of hFE1

Rank	B	C
Range	60-120	100-200





Characteristics Curve





TO-92 Dimension

3-Lead TO-92 Plastic Package
HSMC Package Code: A

Marking:

Pb Free Mark
 Pb-Free: "●" (Note)
 Normal: None

Date Code Control Code

Note: Green label is used for pb-free packing

Pin Style: 1. Emitter 2. Collector 3. Base

Material:

- Lead solder plating: Sn60/Pb40 (Normal), Sn/3.0Ag/0.5Cu or Pure-Tin (Pb-free)
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

DIM	Min.	Max.
A	4.33	4.83
B	4.33	4.83
C	12.70	-
D	0.36	0.56
E	-	*1.27
F	3.36	3.76
G	0.36	0.56
H	-	*2.54
I	-	*1.27
$\alpha 1$	-	*5°
$\alpha 2$	-	*2°
$\alpha 3$	-	*2°

*: Typical, Unit: mm

TO-92 Taping Dimension

DIM	Min.	Max.
A	4.33	4.83
D	3.80	4.20
D1	0.36	0.53
D2	4.33	4.83
F1, F2	2.40	2.90
H	15.50	16.50
H1	8.50	9.50
H2	-	1
H2A	-	1
H3	-	27
H4	-	21
L	-	11
L1	2.50	-
P	12.50	12.90
P1	5.95	6.75
P2	50.30	51.30
T	-	0.55
T1	-	1.42
T2	0.36	0.68
W	17.50	19.00
W1	5.00	7.00

Unit: mm

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Head Office And Factory:

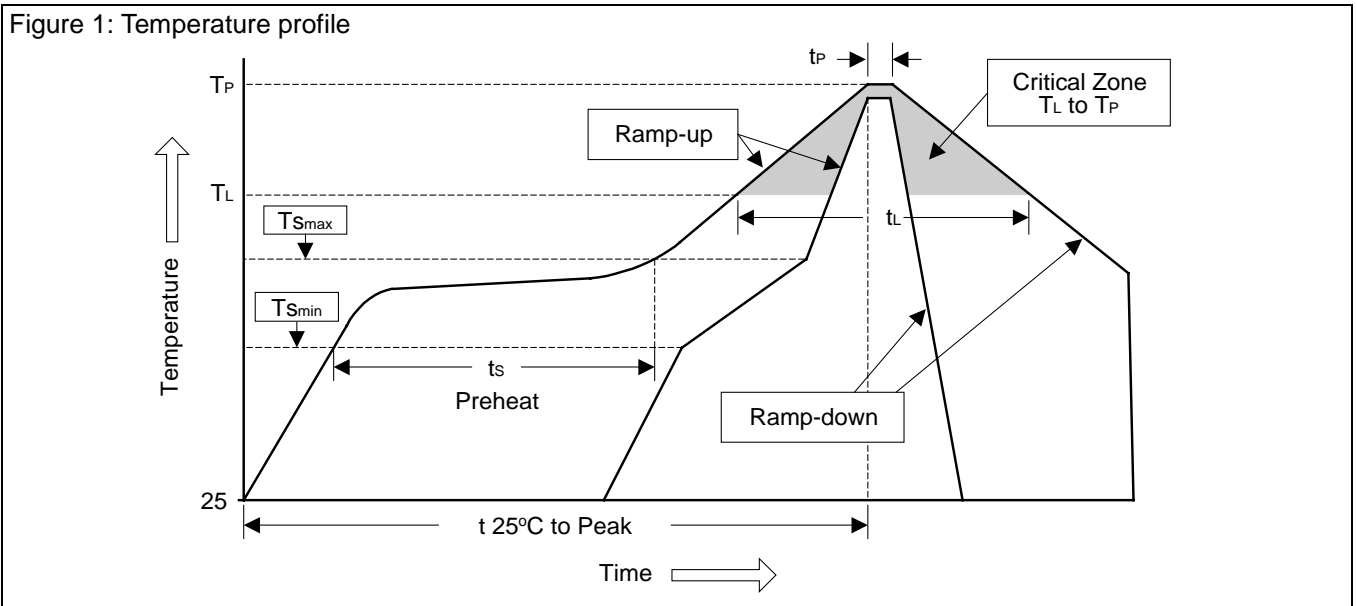
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Soldering Methods for HSMC's Products

1. Storage environment: Temperature=10°C~35°C Humidity=65%±15%
2. Reflow soldering of surface-mount devices

Figure 1: Temperature profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	<3°C/sec	<3°C/sec
Preheat		
- Temperature Min (T_{Smin})	100°C	150°C
- Temperature Max (T_{Smax})	150°C	200°C
- Time (min to max) (t_s)	60~120 sec	60~180 sec
T_{Smax} to T_L		
- Ramp-up Rate	<3°C/sec	<3°C/sec
Time maintained above:		
- Temperature (T_L)	183°C	217°C
- Time (t_L)	60~150 sec	60~150 sec
Peak Temperature (T_P)	240°C +0/-5°C	260°C +0/-5°C
Time within 5°C of actual Peak Temperature (t_P)	10~30 sec	20~40 sec
Ramp-down Rate	<6°C/sec	<6°C/sec
Time 25°C to Peak Temperature	<6 minutes	<8 minutes

3. Flow (wave) soldering (solder dipping)

Products	Peak temperature	Dipping time
Pb devices.	245°C ±5°C	5sec ±1sec
Pb-Free devices.	260°C +0/-5°C	5sec ±1sec